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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/590,783

06/25/2007

Damian Fiolka

Q96197

1357

23373 7590 07/14/2008
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EXAMINER

KIM, PETER B

ART UNIT

PAPER NUMBER

2851

MAIL DATE

DELIVERY MODE

07/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,783	Applicant(s) FIOLKA, DAMIAN	
	Examiner Peter B. Kim	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-57 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 39-47 and 52-57 is/are rejected.
- 7) ☒ Claim(s) 48-51 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/25/2007, 8/25/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

Claims 42-44 and 51 are objected to because of the following informalities: claims 42-44 are directed to structures which are not included in the invention, and elements are negatively recited. In claim 51, "10 and 22" should be followed by a unit. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 39-45, 47, and 53-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiraishi (6,252,647).

Regarding claims 39 and 56, Shiraishi discloses an illumination system for microlithography exposure apparatus (Fig. 20 and 29) and a method for producing semiconductor component for illuminating an illumination field (27) using light of a primary light source (1) comprising a light distribution device (12) for receiving light from the primary light source and generating a predetermined, two-dimensional intensity distribution in a first surface of the illumination system (91a, col. 36, lines 6-10), a first raster arrangement receiving the spatial two-dimensional intensity distribution and generating arrangement of secondary light sources (fly's eye lens 91A produces arrangement of secondary sources), a second raster arrangement receiving light from the secondary light and at least partially superposing light from

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the secondary light source in the illumination field (col. 35, lines 51-55, col. 29, lines 3-12) and the light distribution device comprising at least one diffractive optical element (12) generating angular distribution has separate (separate elements 91A) or contiguous luminous zones which are coordinated in terms of form and size with the first raster elements of the first raster arrangement (col. 36, lines 50-58).

Regarding claim 40, Shiraishi discloses the diffractive optical elements which sets all first raster elements associated with exit light distribution are completely illuminated by intensity distribution, while first raster element which do not contribute to the exit light distribution remain unilluminated (Fig. 29-31, col. 36, line 44 – col. 37, line 20). Regarding claim 41, Shiraishi discloses the diffractive optical element generating multipole illumination corresponding to form and size of the first raster element (Fig. 29 and 38). Regarding claim 42-44, Shiraishi discloses no zoom device, axicon system and no variably adjustable optical component between the primary light source and the first raster element. Regarding claims 45 and 57, Shiraishi discloses a changeover device for diffractive elements for changing illumination modes (Fig. 1). Regarding claim 47, Shiraishi discloses illuminating at least one raster element (Fig. 29). Regarding claim 53, Shiraishi discloses at least one raster arrangement which is in microlenses (Fig. 29, fly's eye lens). Regarding claim 54 and 55, Shiraishi discloses a shading diaphragm generating a sharp edge of the intensity distribution (ref. 16) and at least one Fourier lens (Fig. 29, col. 36, lines 59-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 46 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi in view of Moshrefzadeh et al. (Moshrefzadeh) (2001/0028925).

Shiraishi discloses the claimed invention as discussed above; however, Shiraishi does not disclose the diffractive optical element as a computer-generated hologram and the diffractive optical element having two or more differently structured partial regions. Moshrefzadeh discloses in para 0041, a diffractive optical element as a computer generated hologram. Although Moshrefzadeh does not disclose the diffractive optical element having two or more differently structural partial regions, it would be obvious to one of ordinary skill in the art to provide such structure using computer generated hologram to generate a number of different light distributions. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the diffractive optical element of Moshrefzadeh to the invention of Shiraishi in order to generate a plurality or an array of regions of light distribution as taught by Moshrefzadeh in para 0040.

Allowable Subject Matter

Claims 48-51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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None of the prior art of record teaches or discloses the illumination system comprising the diffractive optical element configured to illuminating one luminous zone with maximum intensity at least one raster element apart from a narrow edge region.

None of the prior art of record teaches or discloses the illumination system comprising the primary light source of laser having a divergence DL wherein a maximum divergence of the diffractive optical element in the plane is DMAX, and the number n of the raster element of the first raster arrangement for generating a homogenizing effect, is predetermined that a defined ratio of the proportion of radiation impinging on the first raster element with flat top intensity to the total radiation impinging on the first raster element is not undershot.

None of the prior art of record teaches or discloses the illumination system comprising the primary light is a laser having a divergence between 0.5 and 1 mrad, wherein the maximum divergence of the diffractive element is 30 mrad and wherein the number of raster elements of the first raster arrangement lies between 10 and 22.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter B. Kim/
Primary Examiner, Art Unit 2851

July 9, 2008